SB761
U7I54
1987

ted States
partment of
griculture

Forest
Service

Intermountain
Region

Ogden, Utah

# Forest Insect and Disease Conditions

## Intermountain Region

## 1987

# FOREST INSECT AND DISEASE CONDITIONS

## Intermountain Region
## 1987

Compiled by:

J. Hoffman
A. Keysor
A. Knapp
J. Weatherby

Forest Pest Management
State and Private Forestry
USDA Forest Service
Intermountain Region
324 25th Street
Ogden, Utah 84401

## FOREST PEST MANAGEMENT
## INTERMOUNTAIN REGION

**Regional Office**
**324 25th Street**
**Ogden, Utah 84401**
**(801) 625-5257**
**FTS 586-5257**

| | |
|---|---|
| David G. Holland | Group Leader |
| Garth Baxter | Program Manager/ Pesticide Coordinator |

**Ogden Field Office**
**324 25th Street**
**Ogden, Utah 84401**
**(801) 625-5458**
**FTS 586-5458**

| | |
|---|---|
| Leon A. LaMadeleine | Ogden Field Office Representative |
| Steve Munson | Entomologist |
| Borys M. Tkacz | Plant Pathologist |
| Ann M. Keysor | Biological Technician |

**Boise Field Office**
**1750 Front Street, Room 202**
**Boise, Idaho 83702**
**(208) 334-1345**
**FTS 554-1345**

| | |
|---|---|
| Ralph E. Williams | Boise Field Office Representative |
| Ralph W. Thier | Entomologist |
| Julie C. Weatherby | Entomologist |
| James T. Hoffman | Plant Pathologist |
| K. Andrew Knapp | Biological Technician |
| Marianne Rowe | Secretary |

LIBRARY COPY
ROCKY MTN. FOREST & RANGE
EXPERIMENT STA...

## TABLE OF CONTENTS


**Subject** **Page**

Resumé of Conditions . . . . . 1

### ENTOMOLOGY

**Bark beetles**
- Mountain pine beetle . . . . . 2
- Spruce beetle . . . . . 2
- Douglas-fir beetle . . . . . 7
- Pine engraver beetle . . . . . 7
- Western pine beetle . . . . . 7
- Jeffrey pine beetle . . . . . 7

**Defoliators**
- Western spruce budworm . . . . . 9
- Sugar pine tortrix/Pine needle sheathminer . . . . . 9
- Douglas-fir tussock moth . . . . . 9
- Gypsy moth . . . . . 9

### PATHOLOGY

**Stem and branch diseases**
- Dwarf mistletoes . . . . . 16

**Root diseases**
- Root disease of nursery seedlings . . . . . 17

**Foliage diseases**
- Douglas-fir needle cast . . . . . 17
- Limber pine needle cast . . . . . 17

**Vascular wilts**
- Dutch elm disease . . . . . 17

**Abiotic Damage**
- Frost damage . . . . . 17
- Blowdown . . . . . 17

**Recent publications** . . . . . 20

## RESUMÉ OF CONDITIONS

Tree mortality caused by the mountain pine beetle decreased from 1,511,600 trees in 1986 to 181,300 trees in 1987. Most of this reduction was attributed to the collapse of the massive infestation on the Ashley National Forest and a significant reduction in mortality on the Wasatch-Cache National Forest. Infestations persist on the Ashley, Bridger-Teton, Boise, Challis, Salmon, Sawtooth and Wasatch-Cache National Forests.

The spruce beetle continued to cause extensive mortality on the Payette National Forest, with approximately 15,900 fading trees, indicative of 1985 attacks, detected during the 1987 aerial survey. Smaller infestations are present on the Boise, Fishlake, Manti-LaSal and Uinta National Forests.

Host trees on approximately 873,600 acres were defoliated by the western spruce budworm during 1987 compared to 3.1 million acres in 1986. Infestations decreased in size and intensity on the Boise, Caribou, Challis, Payette Salmon, Sawtooth and Targhee National Forests in southern Idaho; on the Bridger-Teton National Forest in Wyoming; and on the Dixie, Fishlake and Wasatch-Cache National Forests in Utah.

Douglas-fir beetle killed an estimated 12,600 trees in 1987 on National Forest lands, a two-fold increase from 1986. Mortality increased on the Boise, Payette and Targhee National Forests in southern Idaho and on the Bridger-Teton National Forest in Wyoming. Significant infestations are concentrated in the Deep Creek Range southwest of Pocatello on lands administered by the Fort Hall Indian Reservation, the State of Idaho and the Bureau of Land Management.

Tree mortality attributed to a pine engraver beetle/western pine beetle complex killed approximately 9,900 trees on the Boise, Payette and Salmon National Forests in southern Idaho.

Elytroderma needle disease on ponderosa pine was noted for the first time in the Manhattan Creek area on the Idaho City Ranger District of the Boise National Forest, Idaho.

Douglas-fir needlecast is epidemic in southern Idaho and will cause noticeable defoliation of host understory trees at the beginning of the 1988 growing season.

Extensive blowdown of spruce occurred on the Bridger-Teton National Forest and Grand Teton National Park in Wyoming. A smaller area of spruce blowdown was detected on the Wasatch-Cache National Forest in Utah.

## BARK BEETLES

### Mountain Pine Beetle, *Dendroctonus ponderosae* Hopkins

Tree mortality attributed to the mountain pine beetle decreased from 1,511,600 trees in 1986 to 181,300 trees in 1987. Most of this reduction was due to the collapse of the massive infestation in lodgepole and ponderosa pine stands on the Ashley and Wasatch-Cache National Forests in northeastern Utah. Declining, but significant, mortality occurred on the Ashley and Wasatch-Cache National Forests while mortality on the Dixie and Manti-LaSal National Forests remained near 1986 levels.

Static to increasing mountain pine beetle activity occurred on all National Forests in southern Idaho, except the Caribou National Forest where mortality decreased substantially. Approximately 26,800 trees were killed in 1987 compared to 18,300 trees killed in 1986. Significant infestations are located near Lost Basin, near Deadwood Reservoir, and along the headwaters of Trinity Creek on the Boise National Forest; along Squaw Creek on the Challis National Forest; and throughout the Big Wood River Drainage and Sawtooth Valley on the Sawtooth National Forest. During the 1987 aerial survey of the Salmon National Forest, lodgepole pine mortality located on the perimeter of recent burns was attributed to mountain pine beetle; however, subsequent ground surveys revealed that this mortality was primarily a result of fire scorch and opportunistic attacks by pine engraver beetles. Mountain pine beetle is causing relatively minor damage in stands adjacent to these fires. Only minimal activity was observed on the Payette and Targhee National Forests.

Specific mortality figures summarized from aerial detection surveys are displayed in Table 1, and the status of infestations by state is found in Table 2. Locations of major infestations throughout the Region are shown in Figure 1.

### Spruce Beetle, *Dendroctonus rufipennis* (Kirby)

Aerial and ground surveys indicated that approximately 725 mortality centers, containing approximately 16,500 trees, were present on the Payette and Boise National Forests in southern Idaho in 1987 compared to 900 mortality centers and 14,000 trees in 1986. Aggressive salvage and trap tree programs in accessible commercial forest areas have reduced the total number of mortality centers while in untreated areas mortality centers continued to expand. Mortality was scattered throughout host type on the McCall, New Meadows and Council Ranger Districts, Payette National Forest, and on the Cascade Ranger District, Boise National Forest.

In Utah, 300 trees were killed by spruce beetle in the Huntington Creek Drainage of the Manti-LaSal National Forest. Elsewhere, low levels of beetle activity were noted on the Wasatch-Cache and Uinta National Forests.

Mortality figures from aerial detection surveys are found in Table 1. Locations of infestations on the Payette National Forest are shown in Figure 2.

**TABLE 1. Number of trees killed by bark beetles in Region 4 during 1986-87 as determined by aerial detection surveys.**

| Forest[1] (& Adjacent) Land) | Year | Mountain Pine Beetle | Trend | Douglas-Fir Beetle | Trend | Ips/ WPB[2] | Trend | Spruce Beetle | Trend |
|---|---|---|---|---|---|---|---|---|---|
| Ashley | 1987 | 133,409 | Decrease | 0 | Static | 0 | Static | 0 | Static |
| | 1986 | 1,302,126 | — | 0 | — | 0 | — | 0 | — |
| Boise | 1987 | 4,518 | Static | 5,027 | Increase | 7,907 | Increase | 669 | Static |
| | 1986 | 4,248 | — | 1,715 | — | 1,935 | — | 1,095 | — |
| Bridger-Teton | 1987 | 3,224 | Decrease | 1,721 | Increase | 0 | Static | 0 | Static |
| | 1986 | 10,703 | — | 745 | — | 0 | — | 0 | — |
| Caribou | 1987 | 182 | Decrease | 1,262 | Static | 0 | Static | 0 | Static |
| | 1986 | 4,628 | — | 1,415 | — | 0 | — | 35 | — |
| Challis | 1987 | 4,730 | Increase | 0 | Static | 0 | Static | 0 | Static |
| | 1986 | 2,494 | — | 0 | — | 0 | — | 0 | — |
| Dixie | 1987 | 217 | Static | 0 | Static | 0 | Static | 0 | Static |
| | 1986 | 210 | — | 0 | — | 0 | — | 0 | — |
| Fishlake | 1987 | 0 | Static | 0 | Static | 0 | Static | 105 | Static |
| | 1986 | 0 | — | 0 | — | 0 | — | 63 | — |
| Grand Teton National Park | 1987[3] | ** | — | ** | — | ** | — | ** | — |
| | 1986 | 217 | — | 43 | — | 0 | — | 56 | — |
| Manti-LaSal | 1987 | 280 | Decrease | 63 | Increase | 0 | Static | 300 | Increase |
| | 1986 | 397 | — | 0 | — | 0 | — | 56 | — |
| Payette | 1987 | 1,287 | Increase | 1,855 | Increase | 1,364 | Increase | 15,873 | Increase |
| | 1986 | 734 | — | 301 | — | 235 | — | 12,600 | — |
| Salmon | 1987 | 3,754 | Increase | 79 | Decrease | 602 | Increase | 0 | Static |
| | 1986 | 852 | — | 133 | — | 155 | — | 63 | — |
| Sawtooth | 1987 | 11,609 | Increase | 1,200 | Static | 53 | Static | 0 | Static |
| | 1986 | 4,620 | — | 1,202 | — | 77 | — | 49 | — |
| Targhee | 1987 | 735 | Static | 1,220 | Increase | 0 | Static | 0 | Static |
| | 1986 | 738 | — | 348 | — | 0 | — | 25 | — |
| Uinta | 1987 | 0 | Decrease | 0 | Static | 0 | Static | 84 | Static |
| | 1986 | 600 | — | 0 | — | 0 | — | 112 | — |
| Wasatch-Cache | 1987 | 17,355 | Decrease | 153 | Decrease | 0 | Static | 0 | Static |
| | 1986 | 179,490 | — | 335 | — | 0 | — | 49 | — |
| TOTAL | 1987 | 181,300 | | 12,580 | | 9,926 | | 17,031 | |
| | 1986 | 1,511,635 | | 6,237 | | 2,402 | | 14,133 | |

[1] Only portions of Forests flown; actual mortality figures are probably considerably higher.
[2] Western pine beetle abbreviated as WPB
[3] Not surveyed in 1987

**TABLE 2. Status of mountain pine beetle infestations by state during 1987.**

**IDAHO**

| Land Ownership Class | Outbreak Area (Thousand Acres) | Number of Trees (Thousands) |
|---|---|---|
| National Forest | 33.2 | 24.8 |
| Other Federal | 1.0 | 0.1 |
| State and Private | 1.9 | 1.5 |
| TOTAL | 36.1 | 26.8 |

**UTAH**

| | | |
|---|---|---|
| National Forest | 92.5 | 144.0 |
| Other Federal | 1.9 | 3.0 |
| State and Private | 3.0 | 4.3 |
| TOTAL | 97.4 | 151.3 |

**WYOMING**

| | | |
|---|---|---|
| National Forest | 2.0 | 2.7 |
| Other Federal | 0.1 | 0.1 |
| State and Private | 0.2 | 0.4 |
| TOTAL | 2.3 | 3.2 |

**FIGURE 1. Areas infested by mountain pine beetle in Region 4 during 1987 as observed during aerial detection surveys.**

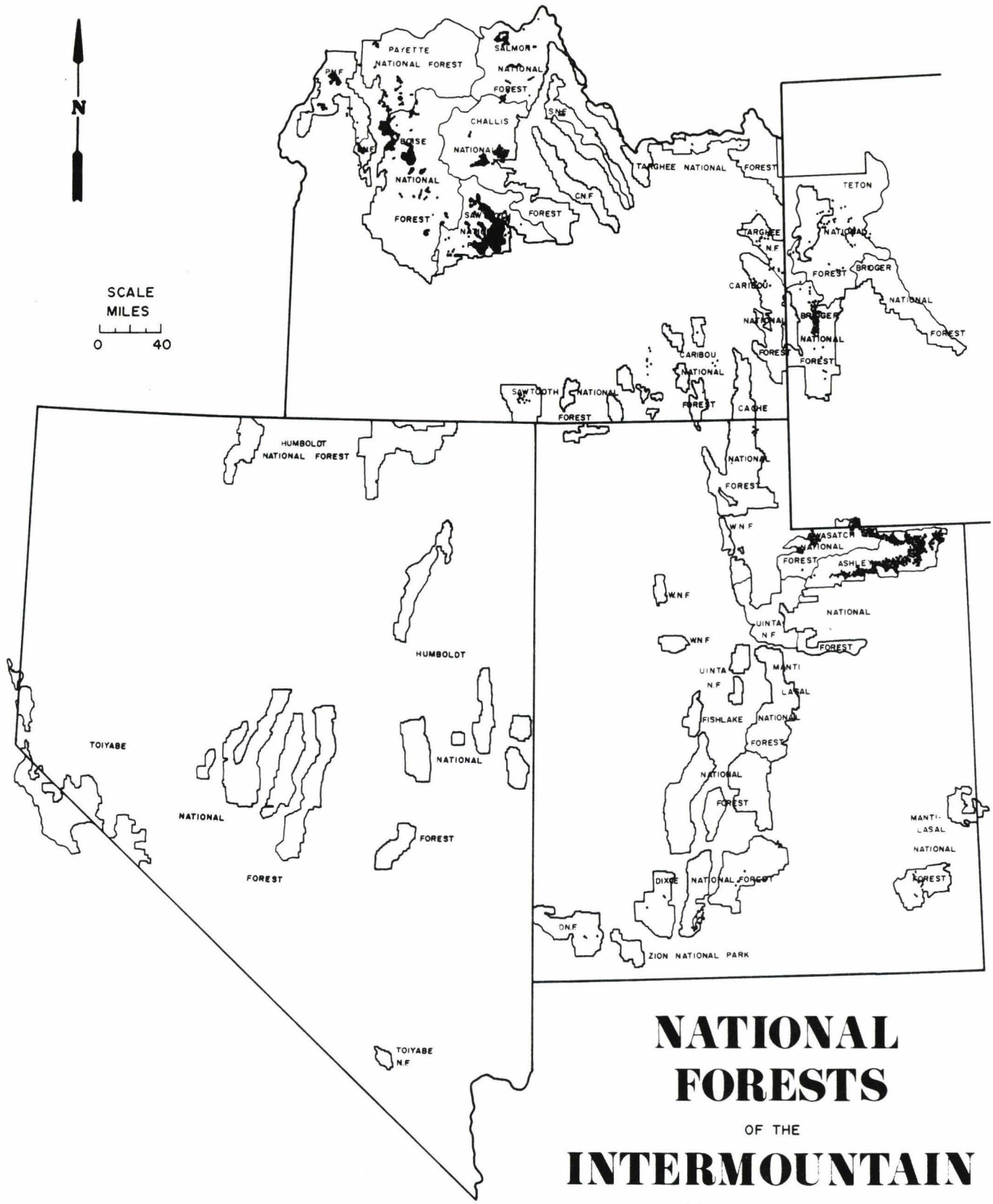
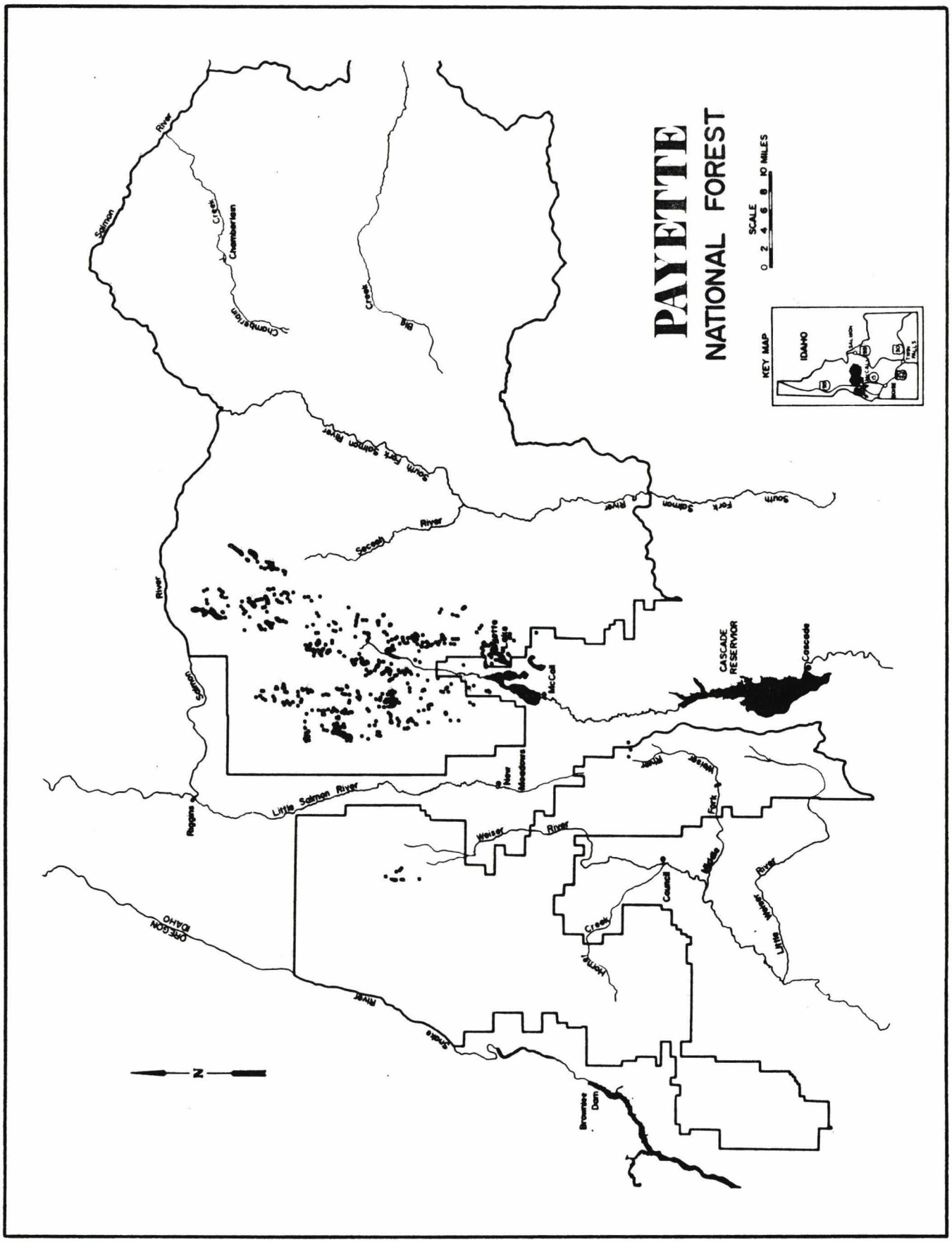


**FIGURE 2. Areas infested by spruce beetle on the Payette National Forest during 1987 as observed during aerial detection surveys.**



## Douglas-Fir Beetle, *Dendroctonus pseudotsugae* Hopkins

Douglas-fir mortality on National Forest lands caused by the Douglas-fir beetle continued to increase throughout southern Idaho with 10,600 trees killed in 1987 compared to 5,100 trees in 1986. Increases in beetle activity occurred on the Boise, Payette and Targhee National Forests. Activity was concentrated in the Shaefer Butte area on the Boise National Forest, and throughout the Monroe Butte-Sturgill Peak area and along the Middle Fork of the Weiser River Drainage on the Payette National Forest. While activity remained relatively static on the Caribou and Sawtooth National Forests significant infestations continue in the Scout Mountain and Portneuf Ranges on the Caribou National Forest and throughout the South Fork of the Boise River Drainage on the Sawtooth National Forest. Elsewhere in southern Idaho approximately 11,400 trees were killed southwest of Pocatello along the Deep Creek range on lands administered by the Fort Hall Indian Reservation, the State of Idaho and the Bureau of Land Management.

In Utah, Douglas-fir beetle continued to kill trees weakened by western spruce budworm defoliation in Logan Canyon on the Wasatch-Cache National Forest. Many scattered Douglas-fir beetle infested trees were detected throughout the Bookcliff Plateau on lands administered by the Bureau of Land Management. In western Wyoming, on the Bridger-Teton National Forest tree mortality increased from 750 trees in 1986 to 1,700 trees in 1987. Infestations persist in the Greys River, Hoback and Buffalo Fork Drainages. Specific mortality figures as noted by aerial detection surveys are found in Table 1.

## Western Pine Beetle, *Dendroctonus brevicomis* LeConte; and Pine Engraver Beetle, *Ips pini* (Say)

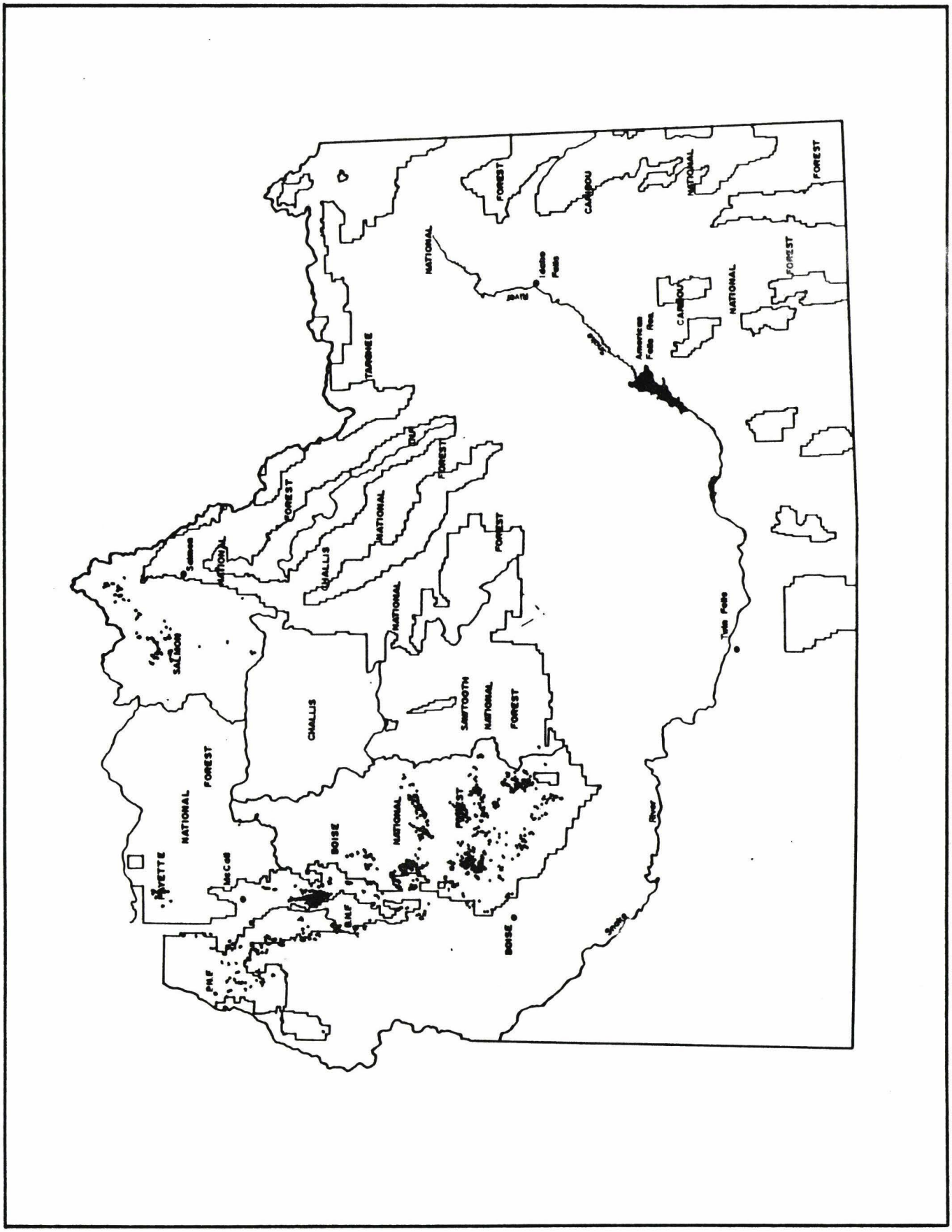
Western pine beetle, frequently intermixed with pine engraver beetle, killed approximately 9,900 ponderosa pine trees throughout host type in southern Idaho with most activity located on the Boise, Payette and Salmon National Forests. Extensive mortality occurred in the Boise Basin and throughout the South Fork of the Payette River Drainage on the Boise National Forest, along Warm Springs Creek and the Middle Fork of the Payette River Drainage on the Payette National Forest and along Spring Creek, Cove Creek and Humbug Creek on the Salmon National Forest.

Specific mortality figures from aerial detection surveys are found in Table 1. Locations of major infestations on the Boise and Payette National Forests are shown in Figure 3.

## Jeffrey Pine Beetle, *Dendroctonus jeffreyi* Hopkins

Jeffrey pine beetle killed 400 trees in the Franktown Creek area on the Toiyabe National Forest in Nevada .

**FIGURE 3. Areas infested by western pine beetle and pine engraver beetle in southern Idaho during 1987 as observed during aerial detection surveys.**



## DEFOLIATORS

### Western Spruce Budworm, *Choristoneura occidentalis* Freeman

Defoliation by western spruce budworm decreased in extent and intensity throughout the Intermountain Region. Trees on approximately 873,600 acres were defoliated during 1987 compared to 3.1 million acres of defoliation in 1986. This 72 percent reduction in acreage of detectable defoliation is likely attributed to unseasonably warm spring temperatures followed by freezing temperatures resulting in widespread larval mortality.

In southern Idaho, defoliation on the Boise, Caribou, Challis, Payette, Salmon, Sawtooth and Targhee National Forests decreased from 2.9 million acres in 1986 to 834,500 acres during 1987. This decrease in acreage of defoliation was accompanied by a decrease in intensity of defoliation. In 1986 areas classified as heavily defoliated accounted for 44 percent of the total defoliated acreage; while in 1987 less than 5 percent of the defoliated acreage was classified as heavily defoliated. Defoliation on the Dixie, Fishlake and Wasatch-Cache National Forests in Utah decreased from 95,500 acres in 1986 to 37,700 acres during 1987. On the Bridger-Teton National Forest in western Wyoming defoliation declined from 111,700 acres in 1986 to 1,400 acres in 1987.

Infested acreage by National Forest is displayed in Table 3, and the status of infestations by state is shown in Table 4. Locations of major infestations throughout the Region are identified in Figure 4.

### Sugar Pine Tortrix, *Choristoneura lambertiana* (Busck); and Pine Needle Sheathminer, *Zelleria haimbachi* Busck

Isolated infestations continued to occur in lodgepole and ponderosa pine on the Boise, Payette, Sawtooth and Targhee National Forests in southern Idaho. Heavily infested trees have severe shoot deformity resulting in a loss of apical dominance.

### Douglas Fir Tussock Moth, *Orgyia pseudotsugata* (McDunnough)

No defoliation was noted in southern Idaho during aerial detection surveys.

Pheromone baited detection traps were placed on the Boise, Payette, and Sawtooth National Forests, State and BLM lands around Bellevue, Idaho, and in the Owyhee Mountains of southwestern Idaho. Survey results indicate decreasing or static populations on the Boise, Payette, Salmon and Sawtooth National Forests. Trap catches at Dewey Peak in the Owyhee Mountains remained high. Pheromone baited trap catches for the period from 1980-1987 are summarized in Table 5.

### Gypsy Moth, *Lymantria dispar* L.

Fifty-eight developed sites were monitored in southern Idaho in cooperation with the Idaho Department of Agriculture. The first reported gypsy moth trapped during this annual detection survey in southern Idaho was found in a pheromone trap located near Cascade, Idaho.

**TABLE 3. Acres of defoliation by western spruce budworm in Region 4 during 1986-1987 as observed by aerial detection surveys.**

| Forest[1] (& Adjacent Land) | Year | Defoliation Intensity Light | Moderate | Heavy | Total | Change |
|---|---|---|---|---|---|---|
| Boise | 1987 | 337,400 | 58,000 | 31,300 | 426,700 | -707,700 |
| | 1986 | 76,900 | 302,200 | 754,600 | 1,133,700 | |
| Bridger-Teton | 1987 | 1,400 | 0 | 0 | 1,400 | -110,300 |
| | 1986 | 98,400 | 12,700 | 600 | 111,700 | |
| Caribou | 1987 | 32,300 | 15,100 | 4,600 | 52,000 | -224,900 |
| | 1986 | 47,000 | 141,100 | 88,800 | 276,900 | |
| Challis | 1987 | 16,900 | 4,000 | 0 | 20,900 | -14,000 |
| | 1986 | 32,600 | 2,300 | 0 | 34,900 | |
| Dixie | 1987 | 5,000 | 3,300 | 4,000 | 12,300 | -15,100 |
| | 1986 | 6,300 | 9,100 | 12,000 | 27,400 | |
| Fishlake | 1987 | 0 | 0 | 0 | 0 | -5,000 |
| | 1986 | 5,000 | 0 | 0 | 5,000 | |
| Grand Teton | 1987[2] | ** | ** | ** | ** | ** |
| National Park | 1986 | 23,100 | 1,600 | 100 | 24,800 | |
| Payette | 1987 | 119,000 | 15,800 | 0 | 134,800 | -483,600 |
| | 1986 | 61,800 | 194,000 | 362,600 | 618,400 | |
| Salmon | 1987 | 60 | 540 | 0 | 600 | -29,000 |
| | 1986 | 29,600 | 0 | 0 | 29,600 | |
| Sawtooth | 1987 | 65,000 | 18,200 | 900 | 84,100 | -270,700 |
| | 1986 | 60,700 | 162,800 | 131,300 | 354,800 | |
| Targhee | 1987 | 104,400 | 9,200 | 1,800 | 115,400 | -341,400 |
| | 1986 | 266,800 | 171,400 | 18,600 | 456,800 | |
| Wasatch-Cache | 1987 | 10,000 | 15,400 | 0 | 25,400 | -37,700 |
| | 1986 | 41,700 | 5,200 | 16,200 | 63,100 | |
| TOTAL | 1987 | 691,460 | 139,540 | 42,600 | 873,600 | -2,263,500 |
| | 1986 | 749,900 | 1,002,400 | 1,384,800 | 3,137,100 | |

[1] Only portions of Forest flown; actual acreage figures are probably considerably higher.
[2] Not surveyed in 1987.

**TABLE 4. Status of western spruce budworm by State during 1987.**

**IDAHO**

| Land Ownership Class | Outbreak Area (Thousand Acres) |
|---|---|
| National Forest | 783.1 |
| Other Federal | 1.2 |
| State and Private | 50.2 |
| TOTAL | 834.5 |

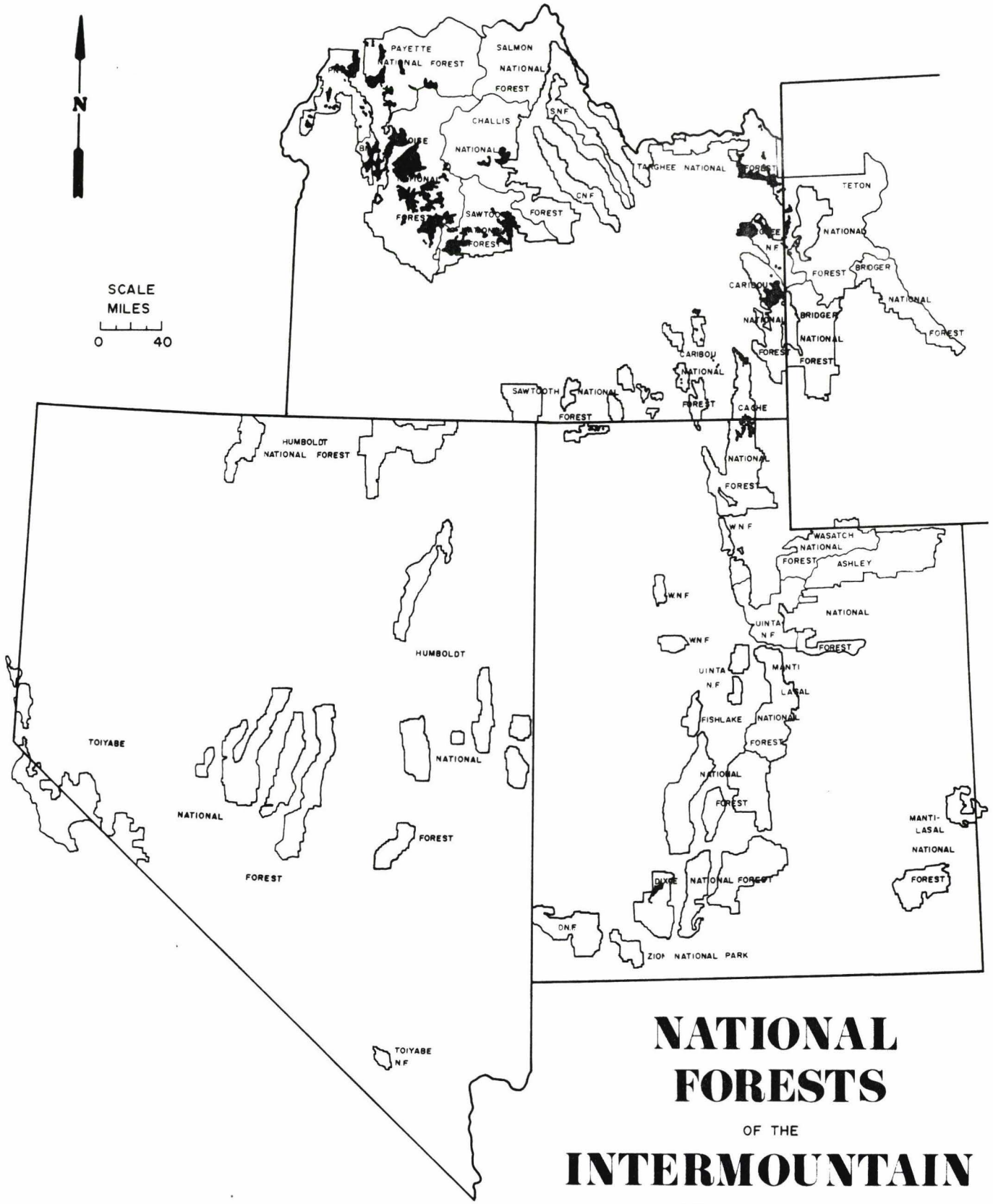
**UTAH**

| | |
|---|---|
| National Forest | 36.2 |
| Other Federal | 0.5 |
| State and Private | 1.0 |
| TOTAL | 37.7 |

**WYOMING**

| | |
|---|---|
| National Forest | 1.4 |
| Other Federal | 0.0 |
| State and Private | 0.0 |
| TOTAL | 1.4 |

**FIGURE 4. Areas infested by western spruce budworm in Region 4 during 1987 as observed during aerial detection surveys.**




# NATIONAL FORESTS OF THE INTERMOUNTAIN REGION

**TABLE 5. Summary of male Douglas-fir tussock moths caught in pheromone-baited sticky traps distributed in southern Idaho, 1980-1987.**

| Survey Site | Mean Number of Male Douglas-fir Tussock Moths/Trap by Year | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 |
| **Boise National Forest** | | | | | | | | |
| Anderson Creek Divide | * | 1.2 | 0.0 | 11.0 | * | * | * | * |
| Bear Creek | * | * | 0.0 | 32.8 | 0.4 | 0.0 | 1.2 | 1.4 |
| Skunk Creek | * | 0.2 | 0.6 | 29.0 | 0.0 | 1.0 | 1.2 | 0.2 |
| Yellow Pine Creek | * | * | 0.0 | 10.6 | 0.4 | * | * | * |
| **Payette National Forest** | | | | | | | | |
| Adams Creek | * | * | 53.6 | 39.6 | 7.8 | 4.0 | 17.6 | 8.8 |
| Barinaga Corral | * | * | * | 44.2 | 0.4 | 2.8 | 4.0 | 2.0 |
| Bear Saddle | * | * | 15.2 | 44.0 | 1.0 | 0.2 | 0.2 | 0.4 |
| Brown's Pond | * | 0.0 | 0.6 | 11.0 | 0.5 | * | * | * |
| E. Fk. Brownlee Creek | * | * | 61.2 | 50.6 | 2.6 | 3.4 | 27.0 | 6.0 |
| E. Fk. Brownlee Creek 2 | * | * | * | * | * | * | * | 12.0 |
| E. Fk. Brownlee Creek 3 | * | * | * | * | * | * | * | 0.8 |
| Fourbit Creek | * | * | 49.8 | 42.8 | * | 4.8 | 30.4 | 2.0 |
| Fourbit Creek 2 | * | * | * | * | * | * | * | 2.3 |
| Fourbit Creek 3 | * | * | * | * | * | * | * | 37.0 |
| Little Weiser | * | * | * | 25.6 | * | 0.6 | 0.4 | * |
| McDowell Trail | * | * | * | 35.8 | 5.0 | 6.8 | 24.6 | 1.2 |
| McDowell Trail 2 | * | * | * | * | * | * | * | 3.2 |
| McDowell Trail 3 | * | * | * | * | * | * | * | 2.3 |
| Olive Creek | * | * | 36.8 | 51.2 | 14.6 | 10.5 | 46.8 | 9.8 |
| Olive Creek 2 | * | * | * | * | * | * | * | 12.6 |
| Olive Creek 3 | * | * | * | * | * | * | * | 1.8 |
| Seid Creek | * | * | * | 17.4 | 11.2 | * | 27.2 | 4.8 |
| Seid Creek 2 | * | * | * | * | * | * | * | 6.8 |
| Seid Creek 3 | * | * | * | * | * | * | * | 2.6 |
| Stacy Creek | * | * | * | 42.8 | 18.0 | 8.8 | 3.8 | 5.0 |
| **Salmon National Forest** | | | | | | | | |
| Arnett Creek | * | * | 0.0 | 0.6 | 0.0 | * | * | * |
| Colson Creek | * | * | 15.2 | 39.0 | 3.2 | * | 7.2 | 5.2 |
| Headwaters | * | * | * | * | 0.0 | * | * | * |
| Lick Creek | * | * | 7.6 | 38.4 | 0.6 | * | 6.0 | 0.6 |
| Porphyry Creek | * | * | 0.0 | 4.6 | 0.0 | * | * | * |
| **Sawtooth National Forest** | | | | | | | | |
| Couch Summit | * | 0.4 | 0.0 | 7.0 | 0.0 | * | * | * |
| Howell Canyon | * | * | * | * | 0.2 | * | * | * |
| Little Water Gulch | * | 3.8 | 13.6 | 27.0 | 17.2 | 0.0 | 34.6 | 26.6 |
| Little Water Gulch 2 | * | * | * | * | * | * | * | 3.5 |
| Little Water Gulch 3 | * | * | * | * | * | * | * | 16.4 |
| Virginia Gulch | * | 0.6 | 2.0 | 26.8 | 1.8 | 0.0 | 4.8 | 6.8 |
| Warm Springs | * | * | 2.6 | 14.8 | 0.8 | * | * | * |
| **Idaho State Lands** | | | | | | | | |
| Sharps Canyon | * | 19.4 | 16.2 | 41.2 | 1.3 | 5.2 | 22.6 | 8.4 |
| **B.L.M. Lands** | | | | | | | | |
| Dewey Peak | 55.0 | 64.0 | * | * | 15.0 | 1.6 | 33.7 | 38.6 |
| Dewey Peak 2 | * | * | * | * | * | * | * | 2.4 |
| Dewey Peak 3 | * | * | * | * | * | * | * | 1.8 |
| Mill Creek | 0.6 | 47.6 | * | * | 6.6 | 0.0 | 0.4 | 0.0 |
| New York Summit | * | * | * | * | 0.0 | * | 1.8 | 3.8 |
| So. Fk. Boulder Creek | * | * | * | * | 0.7 | 0.2 | 1.8 | 0.2 |

* Site was not sampled.

**Intermountain Region—Status of insects in southern Idaho, Nevada, Utah, and western Wyoming.**

| Insect | Host | Location | Remarks |
|---|---|---|---|
| Douglas-fir beetle *Dendroctonus pseudotsugae* | Douglas-fir | Idaho, Utah, Wyoming | Activity increased in 1987, 12,600 trees were killed on National Forest lands. Increases in beetle activity occurred on the Boise, Payette and Targhee National Forests, ID; and on Bridger-Teton National Forest, WY. Significant infestations are concentrated in the Deep Creek Range southwest of Pocatello, ID. |
| Douglas-fir tussock moth *Orgyia pseudotsugata* | Douglas-fir | Idaho | No new defoliation was observed but moths were detected in pheromone traps in southern Idaho. |
| Eurytomid wasp *Eurytoma* sp. | Ponderosa pine | Idaho | Infestations were noted in ponderosa pine plantations on the Boise National Forest, ID. |
| Gouty pitch midge *Cecidomyia piniinopis* | Pines | Idaho | Isolated infestations were found in pine regeneration on the New Meadows Ranger District, Payette National Forest, ID. |
| Gypsy moth *Lymantria dispar* | - | Idaho | One male gypsy moth was caught in pheromone traps near Cascade, ID in 1987. |
| Jeffrey pine beetle *Dendroctonus jeffreyi* | Jeffrey pine | Nevada | Minor insect activity was detected on the Toiyabe National Forest, NV. |
| Locust borer *Megacyllene robiniae* | Black locust | Idaho | Approximately 124 black locusts within Boise, ID were killed by the locust borer. |
| Magdalis weevil *Magdalis lecontei* | Ponderosa pine | Idaho | Minor defoliation was observed on ponderosa pine growing on Harris Creek Summit, Boise National Forest, ID. |
| Mountain pine beetle *Dendroctonus ponderosae* | Lodgepole pine, ponderosa pine, other pines | Idaho, Utah, Wyoming | Mountain pine beetle activity decreased throughout the Region. Tree mortality decreased from 1.5 millon trees in 1986 to 181,300 trees in 1987. Significant infestations occurred on the Boise, Challis, Salmon and Sawtooth National Forests, ID; the Ashley and Wasatch-Cache National Forests, UT; and the Bridger-Teton National Forest, WY. |
| Pine butterfly *Neophasia menapia* | Ponderosa pine | Idaho | Defoliation was not noted, but small numbers of adults were observed in ponderosa pine stands. |

**Intermountain Region—Status of insects in southern Idaho, Nevada, Utah, and western Wyoming—Continued.**

| Insect | Host | Location | Remarks |
|---|---|---|---|
| Pine engraver *Ips pini* | Pines | Idaho | A significant increase in activity was noted throughout southern Idaho. Pine engraver beetles intermixed with western pine beetles killed 9,900 trees throughout the Region. |
| Pine needle sheathminer *Zelleria haimbachi* | Lodgepole pine | Idaho | Defoliation by this insect, along with the sugar pine tortrix, was noted on trees on the Boise, Payette, Sawtooth and Targhee National Forest. |
| Prescott scale *Matsucoccus vexillorum* | Ponderosa pine | Idaho | Infestations intermixed with pine needle sheathminer and sugar pine tortrix were noted in the Big Deer Creek drainage on the Sawtooth National Forest, ID. |
| Spruce beetle *Dendroctonus rufipennis* | Engelmann spruce | Idaho, Utah, Wyoming | Epidemic populations continue to cause significant mortality on the Payette National Forest, ID. Approximately 15,900 infested trees were detected in 1987. Smaller infestations are present on the Boise National Forest, ID; the Bridger-Teton National Forest, WY; and the Fishlake, Manti-LaSal and Uinta National Forests, UT. |
| Spruce bud scale *Physokermes piceae* | Spruces | Idaho | Infestations of spruce bud scales have been detected on ornamental spruces scattered throughout southern Idaho. |
| Sugar pine tortrix *Choristoneura lambertiana* | Pines | Idaho | This insect often associated with pine needle sheathminer continued to cause scattered defoliation of both lodgepole and ponderosa pines. |
| Western pine beetle *Dendroctonus brevicomis* | Ponderosa pine | Idaho | Significant tree mortality caused by a complex of bark beetles including the western pine beetle was detected on the Boise, Payette and Salmon National Forests, ID. |
| Western pineshoot borer *Eucosma sonomana* | Ponderosa pine | Idaho | Scattered infestations were noted in ponderosa pine plantations on the Boise and Payette National Forests. |
| Western spruce budworm *Choristoneura occidentalis* | Douglas-fir, spruce, true firs, western larch | Idaho, Utah, Wyoming | Conifers on about 873,600 acres were defoliated in 1987, compared to 3.1 million acres in 1986. Infestations declined in total acreage and intensity on the Boise, Caribou, Challis, Payette, Salmon, Sawtooth and Targhee National Forests, ID; and on the Dixie, Fishlake and Wasatch-Cache National Forests, UT. |

## STEM AND BRANCH DISEASES

Stem and branch diseases of forest trees are not closely monitored because change in incidence is difficult to assess annually. Those diseases occuring in the Region, but whose status is not known to have changed significantly, are noted in the summary table at the end of this report.

### Dwarf Mistletoes, *Arceuthobium* spp.

Dwarf mistletoe management considerations are incorporated into most long-range plans and silvicultural prescriptions for timber management throughout the Region. Concurrently, dwarf mistletoe suppression projects are conducted to "clean up" a diminishing acreage of previously harvested stands in which infected trees were left and now overtop established regeneration. The dwarf mistletoe management program is a process of education, pre-suppression survey, evaluation, control, and post-control evaluation. Accomplishments for 1987 are reported in Table 6.

**TABLE 6. Dwarf mistletoe accomplishments - Region 4, 1987.**

| National Forest | Presuppression Survey Acres | Suppression Project Acres | Post-Suppression Evaluation Acres |
|---|---|---|---|
| Ashley | 425 | 323 | 30 |
| Boise | 24,400 | 550 | 60 |
| Bridger-Teton | 5,000 | 800 | 200 |
| Caribou | 0 | 465 | 0 |
| Challis | 50 | 165 | 135 |
| Dixie | 1,610 | 1,360 | 180 |
| Payette | 4,100 | 360 | 0 |
| Salmon | 11,500 | 287 | 200 |
| Sawtooth | 59 | 59 | 118 |
| Targhee | 20,000 | 714 | 1,400 |
| Wasatch-Cache | 0 | 200 | 0 |
| TOTAL | 67,144 | 5,283 | 2,323 |

## ROOT DISEASES

As with stem and branch diseases, root diseases of forest trees are not closely monitored. However, new host/pathogen combinations or locations of root diseases are often identified and evaluated. Diseases causing root malformation and mortality of nursery grown seedlings are closely monitored. Status of known root pathogens of forest trees are listed in the summary table.

### Root disease of nursery seedlings, *Fusarium oxysporum, Fusarium* sp., *Pythium* sp.

Mortality of large numbers of 1-0 ponderosa pine seedlings from several seed sources was noted at the USDA Forest Service Lucky Peak Nursery, Boise, ID. *Fusarium oxysporum* and an unidentified *Fusarium* sp. were consistently isolated from roots of affected seedlings.

As summer temperatures increased, patchy mortality of 2-0 Engelmann spruce seedlings was noted. Seedlings several inches away from initially observed mortality either died or root systems were distorted due to root mortality. However, mortality patches did not continue to expand late into summer. *Fusarium oxysporum* and a very fast growing *Pythium* sp. were consistently isolated from diseased roots.

## FOLIAGE DISEASES

### Douglas-fir Needle Cast, *Rhabdocline* sp.

Epidemic levels of Douglas-fir needle cast were noted throughout southern Idaho in the fall of 1987, indicating severe defoliation is expected at the beginning of the 1988 growing season. Mortality of heavily defoliated seedling and sapling-sized trees previously stressed by budworm defoliation and the 1987 drought is expected in 1988.

### Limber Pine Needle Cast, *Lophodermella arcuata* (Darker) Darker

Approximately 1,500 acres of off-colored limber pine were aerially detected on the Bridger-Teton National Forest in Wyoming. Damage was caused by the needle cast fungus *Lophodermella arcuata.*

## VASCULAR WILTS

### Dutch Elm Disease, *Ceratocystis ulmi* (Buism.) C. Mor.

The city of Boise, Idaho has a street-tree population of less than 2,000 elm trees. In 1987, 16 trees succumbed to dutch elm disease. The long-range plan for the city is to replace elms with trees requiring less maintenance and susceptible to fewer pests.

## ABIOTIC DAMAGE

### Frost Damage

Late spring frosts caused discoloration, distortion and mortality of newly emerging shoots and needles on ponderosa pine and Douglas-fir in several areas west of Council, Idaho.

### Blowdown

A tornado-like storm in July resulted in extensive blowdown of spruce on the Bridger-Teton National Forest and in the Grand Teton National Park, Wyoming. On the Bridger-Teton National Forest blowdown was scattered across 14,000 acres of intermixed forest and meadow vegetation types. In the Grand Teton National Park approximately 800 acres of spruce blowdown occurred. An additional 70 acres of spruce blowdown was detected on the Ogden Ranger District of the Wasatch-Cache National Forest in Utah.

**Intermountain Region—Status of diseases in southern Idaho, Nevada, Utah, and western Wyoming.**

| Disease | Host | Location | Remarks |
|---|---|---|---|
| **STEM AND BRANCH DISEASES** | | | |
| Aspen trunk rot *Phellinus tremulae* | Aspen | Idaho, Nevada, Utah, Wyoming | Decay occurs in most aspen stands in the Region. |
| Comandra blister rust *Cronartium comandrae* | Lodgepole pine, ponderosa pine | Idaho, Utah, Wyoming | Infections occur infrequently on lodgepole pine in Idaho, Utah and Wyoming and infrequently on ponderosa pine across southern Idaho. |
| Dwarf mistletoes *Arceuthobium* spp. | Douglas-fir, lodgepole pine, ponderosa pine, western larch, Jeffrey pine | Idaho, Nevada, Utah, Wyoming | These continue to be the most widespread and frequently observed pests in southern Idaho. Suppression projects removed infected overstory trees from 5,283 acres. |
| Red ring rot *Phellinus pini* | Western larch, true firs, spruce, Douglas-fir, pines | Idaho, Utah, Wyoming | This fungus occurs throughout the Region in stands of mature conifers. Infection intensity is highly variable. |
| Rust-red stringy rot *Echinodontium tinctorium* | Grand fir, white fir, subalpine fir | Idaho, Nevada | Decay caused by this fungus is common in mature and overmature stands of true firs. |
| Stalactiform blister rust *Cronartium coleosporioides* | Lodgepole pine | Idaho, Utah, Wyoming | This rust occurs in localized areas of host type across the Region. Heavy infection has been noted in several areas. |
| Western gall rust *Endocronartium harknessii* | Lodgepole pine, ponderosa pine | Idaho, Utah, Wyoming | Gall rust occurs throughout host types. Infection levels are highly variable. |
| **ROOT DISEASES** | | | |
| Annosus root disease *Heterobasidion annosum* | Douglas-fir, lodgepole pine, ponderosa pine, true firs | Idaho, Nevada, Utah, Wyoming | This fungus occurs as a root and butt rot of true firs. It causes a root rot, frequently in young ponderosa pines and infrequently in lodgepole pine and Douglas-fir. |
| Armillaria root disease *Armillaria* sp. | Douglas-fir, grand fir, pines, spruce | Idaho, Utah, Wyoming | While evidence of *Armillaria* may be found throughout southern Idaho, in most instances it functions as a weak pathogen or saprophyte. In Utah infection levels increase following thinning in lodgepole pine stands. |

**Intermountain Region—Status of diseases in southern Idaho, Nevada, Utah, and western Wyoming—Continued.**

| Insect | Host | Location | Remarks |
|---|---|---|---|
| Schweinitzii butt rot *Phaeolus schweinitzii* | Douglas-fir, ponderosa pine | Idaho | Decay is common in mature and over-mature forests, especially those having a recent fire or logging history. The fungus is often found associated with other root diseases and bark beetles. |
| Tomentosus root disease *Inonotus tomentosus* | Douglas-fir, spruce, subalpine fir | Idaho, Utah | The fungus is commonly found with *P. schweinitzii* as a root/butt rot of pole-size Douglas-fir and spruce—less often of subalpine fir—in southern Idaho. Infection may result in occasional mortality. |
| **FOLIAGE DISEASES** | | | |
| Douglas-fir needlecast *Rhabdocline* spp. | Douglas-fir | Idaho | Heavy infection levels were noted in the fall of 1987 throughout the range of the host in central and southeastern Idaho. Defoliation levels will be high during early 1988. |
| Elytroderma disease *Elytroderma deformans* | Ponderosa pine | Idaho | High levels of infection were noted in stands on Little Donner Summit, Cascade,ID and in Manhattan Creek, Idaho City, ID. |
| Fir broom rust *Melampsorella caryophyllacearum* | Subalpine fir | Idaho, Utah, Wyoming | Infection occurs scattered throughout the host type, but high infection levels have been noted in forested areas south of Twin Falls and Burley, ID. |
| Fir needle cast *Lirula* spp. | Subalpine fir, grand fir | Idaho | Infected stands were found on the Council and Weiser Ranger Districts of the Payette National Forest. |
| Larch needle cast *Meria laricis* | Western larch | Idaho | Incidence and severity of infection throughout the host type in west-central Idaho was at a very low level. |
| Limber pine needle cast *Lophodermella arcuata* | Limber pine | Wyoming | Heavy infection of limber pine was aerially detected on 1,500 acres on the Bridger-Teton National Forest. |
| Marssonina blight *Marssonina populi* | Aspen | Idaho, Utah, Wyoming | Scattered incidence of light intensity was noted throughout most of the host range. Moderate to heavy infections were observed on the Wasatch-Cache, Ashley and Manti-LaSal National Forests, UT. |
| Spruce broom rust *Chrysomyxa arctostaphyli* | Engelmann spruce | Idaho, Utah, Wyoming | Infection occurs scattered throughout the host type. It is common in eastern Idaho. |

## RECENT PUBLICATIONS

Anhold, J.A. Biological evaluation of spruce beetle populations, Big Cottonwood Canyon, Salt Lake Ranger District, Wasatch-Cache National Forest, 1987. FPM Report 87-6. Ogden, UT: USDA Forest Service, Intermountain Region; 1987. 4p.

Knapp, K.A.; Mocettini, P.J. The 1986 western spruce budworm conditions in the Intermountain Region and forecasts for 1987. FPM Report 87-5. Ogden, UT: USDA Forest Service, Intermountain Region; 1987. 23p.

Keysor, A.M. An evaluation of proposed dwarf mistletoe control projects, Pinedale Ranger District, Bridger-Teton National Forest. FPM Report 87-3. Ogden, UT: USDA Forest Service, Intermountain Region; 1987. 7p.

Thier, R.W. Douglas-fir tussock moth monitoring in southern Idaho 1986. FPM Report 87-4. Ogden, UT: USDA Forest Service, Intermountain Region; 1987. 4p.

Tkacz, B.M. Biological evaluation of forest pest conditions in a spruce-fir stand on Abajo Peak, Monticello Ranger District, Manti-LaSal National Forest. FPM Report 87-2. Ogden, UT: USDA Forest Service, Intermountain Region; 1987. 22p.